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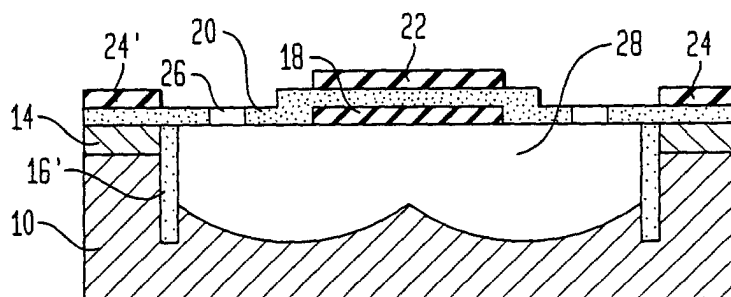
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(54) **Thin film resonators fabricated on membranes created by front side releasing**

(57) A new bulk resonator may be fabricated by a process that is readily incorporated in the traditional fabrication techniques used in the fabrication of monolithic integrated circuits on a wafer. The resonator is decoupled from the wafer by a cavity etched under the resonator using selective etching through front openings (vias) in a resonator membrane. In a typical structure the resonator is formed over a silicon wafer by first forming

a first electrode, coating a piezoelectric layer over both the electrode and the wafer surface and forming a second electrode opposite the first on the surface of the piezoelectric layer. After this structure is complete, a number of vias are etched in the piezoelectric layer exposing the surface under the piezoelectric layer to a selective etching process that selectively attacks the surface below the piezoelectric layer creating a cavity under the resonator.

FIG. 8





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EUROPEAN SEARCH REPORT

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A		11,19, 22,24	
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The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 28 January 2003	Examiner Polesello, P
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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EUROPEAN SEARCH REPORT

Application Number
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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